Name: William Alfred Davis Date of Degree: August 3, 1956

Institution: Oklahoma A. and M. College Location: Stillwater, Oklahoma

Title of Study: A PROPOSED GENERAL SHOP FOR THE JUNIOR HIGH SCHOOL OF MIAMI, OKLAHOMA

Pages in Study: 52 Candidate for Degree of Master of Science

Major Field: Industrial Arts

Scope of Study: The history and philosophy of industrial arts was discussed from the beginning to the present. The study consisted of listing the objectives, characteristics, and purposes of a general shop program in the junior high school. The various courses to be offered were decided after considering the needs of the community and needs of the students. The scheduling of classes, listing of tools and materials, and planning the floor plan of the addition was also undertaken.

Findings and Conclusions: The subjects that can be offered in the general shop program are widely varied; it covers all the industries. The purpose of industrial arts is to give the student experiences in all or as many industries as possible.

The students will start the program while in the eighth grade. They will spend the first nine weeks in an industrial drawing class. It is in this class that they will receive the basis for all other general shop subjects. The remaining twenty seven weeks of the eighth grade will be spent in Woodworking. Here they will learn the use of tools that are basic in most of the other shop subjects.

The students in the ninth grade will be allowed to take nine weeks of training in each of the other four general shop subjects. These subjects are metalworking, electricity, leathercraft, and plastics.

ADVISOR'S APPROVAL John B. Taft

A Proposed General Shop Program

For The Junior High School of Miami Oklahoma

A Proposed General Shop Program
For The Junior High School of Miami Oklahoma

By

William Alfred Davis

Bachelor of Science

Oklahoma Agricultural and Mechanical College

Stillwater, Oklahoma

1948

Submitted to the School of

Industrial Arts Education and Engineering Shopwork

Oklahoma Agricultural and Mechanical College

In Partial Fulfillment of the Requirements

For the Degree of

Master of Science

1956

A Proposed General Shop Program

For The Junior High School of Miami Oklahoma

William Alfred Davis

Master of Science

1956

Report Approved:

John B. Tate
Report Advisor and Assistant Professor,
School of Industrial Arts Education and
Engineering Shopwork

C. L. Hill
Professor and Acting Head,
School of Industrial Arts Education and
Engineering Shopwork

M. R. Lohmann
Dean, Oklahoma Institute of Technology

Robert MacVean
Dean of the Graduate School

Table of Contents

List of Figures

CHAPTER I

The Problem

The industrial arts movement has progressed a great deal since it was first introduced into our public school system. It was first known as manual training and more of a doing or busy program. As new industries were developed and methods of manufacturing improved, the change could also be observed in the school shop program. The purpose of the industrial arts program changed to an exploratory course concerning the different industries in the immediate area.

The industrial arts courses were developed to offer experiences typical of the different industries. It was from these experiences that the student was better able to make a choice as to his life's work.

The industrial arts program as now exists in the Miami Junior High School consists of woodworking and industrial drawing. The programs are organized as unit type programs. The need of a general shop program is very much in evidence. Through this type of program a broad coverage of industrial experiences could be offered to the junior high school students. This could be accomplished with the minimum expenditure of money.

Statement of the Problem. The problem is to develop a general shop program for the Miami Junior High School.

Methods of Investigation Used. Part of the study is the results of material obtained from library sources, a portion being developed from the historical background of industrial arts. Reports of a similarly stated problem have been reviewed. Some of the information has been used in writing this study.

Reviews of Similar Studies. A Master's degree study entitled A Proposed General Shop Course for the Junior High School of Sapulpa, Oklahoma (5), written by Thomas C. Carr in 1952 at Oklahoma Agricultural and Mechanical College, has been used throughout the writing of this report. The outline of this report is very similar to the one used by Carr.

Another study that has been of great help in the writing of this report is entitled, A Proposed Industrial Arts Program for the Junior High Schools of Enid, Oklahoma (6), written by James H. Durham in 1951 at Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma.

Available Literature on This Subject. This study is limited to the planning of a general shop program for the Miami Junior High School. The writer in preparing this study has used the following sources for obtaining material pertaining to the subject:

1. Magazine articles by leaders in the field of industrial arts that relates to the subject of this report.
2. Textbooks written on the general shop program in the junior high school.
3. Textbooks written on the junior high school.
4. General shop programs in other like schools in the state of Oklahoma.

5. Studies of general shop programs as planned and organized by other students in satisfying a part of the requirement for all Master's degrees in Industrial Arts Education.

Expected Use of This Study. No use of this report will be made next year. The building program calls for additional classroom space in the junior high school, along with another elementary school building. These are firsts, but in the near future it is planned to expand the Miami Junior High School shop offerings to include this general shop program.

Organization of The Study. Chapter II covers the history and philosophy of industrial arts in the junior high schools. The first part of Chapter III is concerned with the history and growth of the general shop program. The second part is devoted to selecting the courses to be offered in the Miami Junior High School. Chapter IV in the first part is concerned with the explanation of the subjects to be offered. The second part shows the floor plan and lists the tools and materials needed to start teaching the shop programs. Chapter V is the concluding chapter. It contains a summary of this study and gives recommendations for further study.

The school administrators, educational leaders, and the general public have become more interested in the general shop movement. They see in it a method of offering a large area of exploratory industrial experiences. The program will satisfy a desire of those students who can and want to do something with their hands. It is this group of students that seem to give the administration no end of trouble. A little thought in offering these students something they can use and

show progress in will be of great help to this group. It will aid them in deciding on what they want to do as their life's work.

The next chapter will describe the need for industrial arts in the junior high school. The chapter will also list the objectives and characteristics of the industrial arts program in the junior high school.

CHAPTER II

HISTORY AND PHILOSOPHY OF INDUSTRIAL ARTS IN THE JUNIOR HIGH SCHOOL

In developing any type of industrial arts program one must know the true history and philosophy of industrial arts. Progress will be made accordingly to the understanding of the goals and results we wish to attain. The writer must feel that the task he is undertaking is necessary and worthwhile and can be put to good use in the system for which it is intended. The philosophy of industrial arts may be thought of as learning and developing new experiences in the many fields and areas of industry we find surrounding our schools of today. If industrial arts is to be included in the junior high school, it must be made practical and include those principles that will contribute to the educative process.

Part A

The Background for Industrial Arts in the American Schools

In studying the history and background of industrial arts it is very easy to detect the influences of European manual training on the early American schools. The two methods of instruction that were used in the early American schools were Sloyd and the Russian system.

Early History of Manual Arts in Europe. In the life of the primitive man in his fight for survival, he realized the advantage of being skillful with his hands. In securing food, clothing, and shelter

he depended upon his ability to do handiwork.

The savage used a form of industrial arts or handicraft for the making of tools that were necessary to build a hut, or for making the weapons that were needed for self-preservation and to kill animals for food. Bennett wrote this about the savages' education. "Savage education, then, consists in learning how to obtain the necessities of life for self and family, and how to propitiate the unseen powers supported to be active in nature." (4, page 11) The education of the savage was not in a formal school. It was the unconscious imitation of the older member of the family or tribe.

With the discovery and control of fire, primitive man moved himself to a higher plane of living. Bennett stated this development as follows: "When man gained the power to control fire he passed into another stage of civilization from savagery to barbarism." (2, page 12) This development completely changed man's way of life. He could now eat cooked meat, melt metals, and form and shape them into tools and weapons. The tools allowed him to indulge in new crafts and weapons, provided him with more efficient means of obtaining meats and clothing for his people. This new development brought about a more definite division of labor, as now they had more trades and crafts. New social groups were formed to the extent that a given group was known for a single craft. The knowledge of these crafts was passed on from father to son, or from master to apprentice only by conscious imitation. The idea of teaching of these arts had not been thought of at that time.

Leaders in the Middle Century. In the period 1483 to 1546 Martin Luther, an Augustinian friar, protested the authority of the papacy and against the education given in monastic and ecclesiastical schools. It

was his belief that, "the right kind of schooling should be given to all the people, noble and common, rich and poor; it was to include both boys and girls -- a remarkable advance; finally, the State was to use compulsion if necessary." (4, page 31) "My opinion, said Luther, "is that we must send the boys to school one or two hours a day, and have them learn a trade at home for the rest of the time. It is desirable that these two occupations march side by side." (4, page 31)

The famous English schoolmaster, Richard Muleaster (1531-1611), head master of Merchant Talyer's school from 1561 to 1586 was laying the foundation for the modern science of education. "He thought that all children should learn to read and write but he was most interested in discovering and developing the special abilities of the few." (2, page 33) He has been given the credit for being the first to make drawing one of the fundamental studies of the school. (4, page 33)

One of the leaders in the Middle Centuries, Johann Heinrich Pestalozzi, was to become known as "the father of manual training." Pestalozzi believed as Rousseau did that experience is the best teacher, and established an experimental school in his home. Pestalozzi's schools failed because of economic reasons and not because of his teaching content and ideas. Pestalozzi wrote to a friend concerning his experience at Stanz as follows: (4, page 116)

> I am more than ever convinced that as soon as we have educational establishments combined with workshops, and conducted on a truly psychological basis, a generation will necessarily be formed which, on the other hand, will show us by experience that our present studies do not require one-tenth part of the time or trouble we now give to them.

One of Pestalozzi's beliefs was that children in school should learn to work, not only because of the economic value of skill and the habit of

labor, but because this experience gave sense-impressions which, like the study of objects, became the basis of knowledge. (4, page 120)

In 1799, Fellenberg's Institute was founded by Philip Emanuel von Fellenberg at Hofwyl, Switzerland. This institute probably influenced manual arts more than any other educational experiment of the early nineteenth century. In this institution, Fellenberg applied some of the principles of Pestalozzi. His greatest contribution to education was a system of practical school organization and administration.

American History. The development of industrial arts in America was influenced by the important changes that took place in Europe. The establishing of schools was much easier in America than in Europe because the basic principles had been determined. Free schools, to provide education for all children, were already established in many sections of the country. One of the first laws that was passed in America that had a great influence on industrial arts and industrial education was in 1642 in the Massachusetts Bay Colony; this law being a comprehensive apprenticeship law. Under this law, parents and masters were required to train youth in religion, capital law, and labor.

Possibly one of the earliest American educational leaders was Thomas Budd, who came to New Jersey from England in 1683. He believed a school should be set up to teach every child, rich or poor, the "Art, Mystery or Trade that he or she delighted in." (4, page 62)

Industrial drawing was the first form of industrial arts to be introduced in the United States. This being in the public schools of Massachusetts in the year 1817.

Due to the lack of knowledge in teaching the use of tools, it was not until the method was discovered at the Russian exhibit at the

Centennial held in Philadelphia in 1876 by John D. Runkle that the manual training was taught with the use of tools.

Calvin Milton Woodard was responsible for the introduction of instruction in handiwork into the secondary schools as a part of the general education program for all boys. Under his leadership the first manual training school in the United States was organized and erected in St. Louis, June 6, 1879. During the first half of the 1880's, Woodard and others contributed to the establishment of manual training schools in Baltimore, Chicago, Cleveland, Philadelphia, and Toledo. In all but Baltimore, the schools were established by private means and furnished mainly by wealthy businessmen. The first manual training program to be incorporated into a public school was in Baltimore in 1883-84 when the Baltimore Public Manual Training School was established.

Sloyd Introduced Into America. The Sloyd system that was developed by Salomon was introduced in America about the same time as the Russian System. This system was brought to the attention of Professor John M. Ordway. Ordway wrote this about the features of Sloyd in his 1883 annual report to the Massachusetts Board of Education: (2, page 186)

1. The emphasis laid upon the mental and physical development of the child rather than upon the mere acquisition of skill in the use of common tools.

2. The carefully arranged sequence of the exercises and the care taken to adapt them in other respects to the nature of the child.

3. The restriction of the work of the pupil to the making of complete articles valuable for their usefulness or for their beauty.

4. Insistence upon trained teachers as instructors.

Mrs. Quincy Shaw established the Sloyd Training School in Boston in 1888. Qustaf Larsson, a former student of Salomon, was placed as

the director. Boston was being recognized as a great experimental center of educational handiwork in America at this time. The results of the Russian and Sloyd systems, along with an analysis of American needs, were brought out in the Massachusetts exhibit at the Columbian Exposition in Chicago in 1893. The methods of teaching manual arts in the grammar schools were greatly influenced by this exhibit.

Changing Name from Manual Training to Industrial Arts. In 1904, Charles Russell Richards advocated the changing of the name, "Manual Training" to "Industrial Arts." He was very successful in getting people to use the name, industrial arts. Dr. Bonser was influential in changing manual training as a more or less limited, mechanical, manipulative, doing activity into industrial arts, a content subject in the curriculum, and a method of teaching and learning. (3, page 36)

In the manual arts movement in the latter part of the nineteenth century and the early part of the twentieth century there was a gradual change taking place in manual training and the point of view held toward it. The change was from the purely mechanical aspects to the consideration, of arts and in allowing the pupils to select and design their own projects. This was the beginning of the newer manual arts. Charles Bennett, classifies these arts into five groups: graphic, mechanic, plastic, textile, and bookmaking arts. (4, page 16) The period of the Manual Arts Movement was from 1900 to World War I.

Movement to the General Shop. The general shop theory was first conceived in 1925, but it was not until the middle thirties that they started being installed in high schools.

Newkirk's definition for general shop: "Shops that are planned and equipped to teach two or more distinct types of shop work at the same

time under one teacher are general shops." (13, page 15)

An example of a general shop would be one that is equipped to teach metalwork, woodwork, automobile mechanics, electricity, and plastics at the same time under one instructor. (13, page 15)

The general shop is well adapted to the junior high school. The students of this age are becoming more and more interested in the objects and materials that surround them. These junior high students should try the various subjects in the general shop so as to become better acquainted with the various types of shops. From these various experiences, the student will be better qualified to do and practice his learning about the house. He will also be qualified to buy better products.

Other Leaders in the Field of Industrial Arts.

Fredrick Gordon Bonser. Dr. Bonser was never a teacher of industrial arts, or a supervisor of industrial arts nor was he an author of a textbook, but he contributed very much to industrial arts. He was very influential in the changing of the name manual training to industrial arts. Dr. Bonser was also noted for his definition of industrial arts:

> The industrial arts are those occupations by which changes are made in the form of materials to increase their values for human usage. As a subject for educative purposes, industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to their changes. (13, page 38)

William Elmer Roberts. Roberts did much to the contribution of the art side of industrial arts. He was largely responsible for the new status of industrial arts as a school subject in the junior high school.

Ferdinand Theodore Struck. Dr. Struck's greatest service to the cause of industrial education, as well as the major portion of his professional career was in the preparation of teachers. Another contribution of Dr. Struck was the book he wrote, Creative Teaching.

The purpose of this report is to organize a general shop program for the junior high school of Miami, Oklahoma. The writer feels that he should have some justification for the general shop program rather than the unit type program, of industrial arts. As the reader will note the trend is toward the general shop program for the junior high school due to the present day industries. The fact is known that not everybody has the qualifications, aptitudes, etc. to become a doctor, lawyer, brick mason, dentist, or any other of the hundreds of professions. If this is true, than we need to offer these students a variety of experiences to help them determine the field that they are best suited for, have an aptitude for, and will be happy and content to work to the best of their ability.

Part B

A Philosophical Approach to Industrial Arts.

The part that industrial arts plays in our public schools of today is becoming more accepted not only by the leaders of education, but by the people of the country. This being true then we as educators need to keep before ourselves, as well as the mass of the people, the definitions, characteristics, and objectives of industrial arts.

Definitions. The belief that time changes everything would indicate that possibly time has changed the meaning and purposes of the program we refer to as industrial arts today. In its earlier days, industrial arts was called "manual training" and as such was what some referred to as a "doing activity".

Industrial Arts. A study of the changes made by man in the forms of materials to increase their values and of the problems of life related

to these changes. (3, page 38)

Those phases of general education which deal with industry, its organizations, materials, occupations, processes, and products, and with the problems resulting from the industrial and technological nature of society. (16, page 27)

Trade and Industrial Education. Trade and Industrial Education is the name given to courses and programs of shopwork instruction in the text of the Smith-Hughes Act. Specifically "trade and industrial" is used in speaking of or writing about shopwork courses subsidized by federal vocational education funds.

Industrial Education.

> A generic term including all educational activities concerned with modern industry, its raw materials, products, machines, personnel, and problems. It, therefore, includes both industrial arts, the general education forerunner of our introduction to vocational industrial education and the latter also. (8, page 7)

The General Shop.

> Shops that are planned and equipped to teach two or more distinct types of shopwork at the same time under one teacher are general shops. For example, a shop which is equipped to teach metalwork, woodwork, electricity, plastics, and drafting at the same time under one teacher is a general shop. (13, page 15)

Characteristics of Industrial Arts. All things whether living or dead, man made or God made have definite characteristics which identify them. The following are characteristics of industrial arts as listed by Ericson in his book, Teaching the Industrial Arts. (7, page 248)

Characteristics of Industrial Arts:

1. A definite phase of general education based on values derived principally from manipulative activity and study of materials.
2. Emphasis placed upon exploration and participation rather than upon skill and efficiency.
3. Open and valuable for all students whether talented or not.

4. Pupils of all ages eligible.

5. Aims best served through a variety of experience with tools and materials representing many industries and crafts.

6. Equipment need not match industrial conditions.

7. Classes held for single class periods except in special cases.

8. Not reimbursed through special federal funds.

9. Teachers primarily prepared in teacher-training institutions. (may have trade experience)

10. Course content, length of time, etc., determined by school representatives

11. Projects are chosen with reference to student interest.

12. Standards of accomplishment based upon pupil growth rather than upon skilled work.

Objectives for Industrial Arts. Each subject taught in a public school must have its own set of objectives. The following is the list of industrial arts objectives as given by Wilbur: (16, page 42)

1. To explore industry and American industrial civilization in terms of its organization, raw materials, processes and operations, products, and occupations.

2. To develop recreational and vocational activities in the area of constructive work.

3. To increase an appreciation for good craftsmanship and design, both in the products of modern industry and in artifacts from the material culture of the past.

4. To increase consumer knowledges to a point where students can select, buy, use, and maintain the products of industry intelligently.

5. To provide information about and insofar as possible, experiences, in the basic processes of main industries, in order that students may be more competent to choose a future vocation.

6. To encourage creative expression in terms of industrial materials.

7. To develop desirable social relationships, such as cooperation, tolerance, leadership and followership, and tact.

8. To develop a certain amount of skill in a number of basic industrial processes.

The Policies Bulletin Committee which was composed of some of the leading industrial arts instructors of Oklahoma formulated the following list of objectives for industrial arts in Oklahoma. (15, page 3)

1. Industrial Arts is complementary to other school subjects and provides opportunities to apply knowledge learned in other school subjects.
2. Develops an appreciation of applied knowledge and skills.
3. Provides a knowledge of industrial drawings, the language of industry, and methods of expressing ideas by means of drawings.
4. Contributes to later vocational efficiency.
5. Stimulates students knowledge and appreciation of good design.
6. Instills a satisfaction in personal creative achievement.
7. Develops the ability to analyze a job into its processes and organize them into correct procedure.
8. Contributes to consumer knowledge and induces an appreciation of the value of industrial materials and the need for their conservation.
9. Trains in industrial and home safety (including fire prevention).
10. Acquaints students with industrial information and induces a recognition of the standards of industrial attainment.
11. Develops avocational interests.
12. Trains individuals to be more resourceful in dealing with the material problems of life.
13. Stimulates correct attitudes toward an orderly shop and home and their environment.
14. Aids in making vocational choices.
15. Develops qualities of leadership.
16. Develops cooperative attitudes in working habits.
17. Develops an appreciation of the dignity and importance of the occupation of ones neighbor.

Industrial Arts in General Education. Industrial arts was introduced into the American schools in the latter part of the nineteenth century. Its justification was in the training of the student to work with his hands. Following World War I, the industrial arts program seemed to be justified in providing a finding of the student to help determine what trade he should attempt in the vocational training program. Today's justification of industrial arts would go far beyond the previously mentioned justifications. They would include the objectives previously listed in this chapter as published by the leading industrial arts instructors in Oklahoma in "The Policies Bulletin."

Industrial arts as we know it today has been through a number of changes and for the most part each change has benefited the program. In the future, industrial arts will have more changes if the program is to grow and keep pace with the industrial growth of our nation.

Part C

Industrial Arts in the Junior High School

At the time industrial arts was first introduced into the junior high school, the main objective was to help prepare the student for his life's vocation. It did not take long to prove that this was not an objective of industrial arts. The educational leaders found that boys of junior high school age were in that stage of life that consisted of many changes. They needed some outlet in which they could participate in new and worthwhile experiences. These experiences should be in real life situations to help train them to be good citizens, to fit into society and be a part of that society. Industrial arts in the junior high school as a part of the over-all curriculum gives the student

experiences that will help him become a part of the American way of living.

The Objectives of Junior High School Industrial Arts. If we are to have a balanced junior high school industrial arts program, we must first set up the objectives for that program. These objectives will be realized if we keep them always in mind while planning the various courses of study as to development of information, manipulative skills, and techniques.

If the following list of objectives as stated by Ludington, are accomplished, industrial arts will provide the necessary experiences for a balanced junior high school program. (11, page 12)

1. Orientation and Common Understanding. Experiences in industrial arts should help youth become better oriented in an industrial society by exploring many types of tools, materials, processes, products, and occupations.

2. Technical Competency. Industrial arts programs should provide as many opportunities as possible for pupils to spend at least one year in a phase of work where initial orientation and exploration may help define specialized interests that can be pursued with profit.

3. Consumer Education. Industrial arts experiences can help pupils develop intelligent attitudes, understandings, and skills involved in the selection and use of the products of industry.

4. Avocational Interests. Many pupils are interested in creative activities which involve the use of tools, simple machines, and materials as leisure-time pursuits or hobbies. Industrial arts facilities in modern schools are used to provide a wide variety of useful and enduring recreational and avocational interests.

5. Social Responsibility. Because of the nature of industrial arts shop and laboratory activities, desirable social habits can be developed.

6. Not Isolated. Any consideration of learning experiences such as those mentioned in attaining the functions described here draws attention to the integrating relationship which industrial arts has with other areas in the school. In a

very real sense, industrial arts is closely related to the physical sciences, art, homemaking, the social studies, language, and economics, and cannot function effectively as an isolated subject or course.

7. Contributions. Largely manipulative in character, yet affording content which is informative, technical, and social, industrial arts contributes to adjustment and complete living because it meets needs that are real and satisfies interests that are desirable.

Another group of objectives for industrial arts were formulated. These objectives are by the American Vocational Association Committee on "Improving Instruction in Industrial Arts Teaching" in 1946. A brief statement of these objectives follows: (1, page 15)

1. To develop in each pupil an active interest in industrial life and in the methods of production and distribution.

2. To develop in each pupil the ability to select wisely, care for, and use properly the things he buys or uses.

3. To develop in each pupil an appreciation of good workmanship and good design.

4. To develop in each pupil an attitude of pride or interest in his ability to do useful things.

5. To develop in each pupil a feeling of self-reliance and confidence in his ability to deal with people and to care for himself in an unusual or unfamiliar situation.

6. To develop in each pupil the habit of an orderly method of procedure in the performance of any task.

7. To develop in each pupil the habit of self-discipline which requires one to do a thing when it should be done, whether it is a pleasant task or not.

8. To develop in each pupil the habit of careful, throughtful work without loitering or wasting time. (industry)

9. To develop in each pupil an attitude of readiness to assist others when they need and to join in group undertakings. (cooperation)

10. To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others.

11. To develop in each pupil a knowledge and understanding of mechanical drawing, the interpretation of the conventions in drawings and working diagrams, and the ability to express his ideas by means of drawings.

12. To develop in each pupil elementary skills in the use of the more common tools and machines in modifying and handling materials, and an understanding of some of the more common construction problems.

The General Shop in the Junior High School. The theory of the general shop was first thought of in 1925, but it was not until the early thirties that these shops were set up in the public schools. The general shop in industrial arts is made up of two or more fields of shopwork and all are taught at the same time with the same instructor. Newkirk and Stoddard believe the following characteristics are responsible for the popularity of the general shops: (14, page 14)

1. It is well adapted to the organization of industrial arts content in the light of general education, exploration, and guidance aims of the junior high school.

2. It permits students to be treated as individuals with due respect for their differences in interest and capacity.

3. It enables a student to discover his abilities and aptitudes through manipulations of a wide range of materials, tools, and processes.

4. It offers an economical way to experience in many activities.

5. It makes possible an adequate industrial arts program for the small school.

6. It stimulates the setting up of a well-planned shop and a carefully organized teaching content.

7. It increases teacher efficiency.

The history of industrial arts as covered in this chapter has brought us from the earliest type of the program up to the present day program. Through all phases we can see a definite relationship of the material being taught as to the industrial growth at that particular time.

The trend in the junior high school for the past few years has been toward the general shop program. This trend is due to the broad coverage of experiences that can be realized with the least expenditure for equipment, space, and instruction. The next chapter will discuss the general shop program, its objectives and advantages. The chapter will also discuss and recommend a general shop program for the Miami Junior High School.

CHAPTER III

THE GENERAL SHOP PROGRAM

If a general shop program is to be planned and introduced into the junior high school, the meaning of the program and why it is best suited for the junior high school should be known. A definition of the general shop by Newkirk was quoted in Chapter II of this study. Another meaning of the term by Newkirk follows: (14, page 11)

> The general shop is a broad group of educative industrial arts activities embracing techniques of shop organization and teaching method which enables a community, whether large or small, to present a unified core of content based on life needs as summarized in these aims: developmental experience interpretative of the major phases of the world's industrial work, "handy-man activities," consumer's knowledge and appreciation, guidance, hobbies, social habits, and (for a very small per cent) vocational preparation.

Part A

History and Growth of the General Shop

The general shop as is known today is a very recent addition to methods or types of shop courses. Possibly the first general shop was introduced by Bonser in 1910 in the Speyer School, a demonstration and experimental school of Teachers College, Columbia University.

The introduction of the general shop in the junior high school did not come in with much force until the early thirties.

Current Status of the General Shop. Very few changes have been made in the general shop program during the past twenty or twenty five years. A course in plastics has been added, and the aluminum alloy has

been added to the metal working field. All in all the changes can be pretty well summed as the addition of improved materials to the various areas of shopwork as offered in the general shop.

Objectives of the General Shop. The general shop program is definitely a junior high school program, as the objectives all state it is an exploratory field for youngsters who are at the age when the world looks the largest to them. Therefore, they are forever asking questions and through the medium of general shop, the teacher may help answer these questions and also help the student answer his own questions.

The following objectives for the general shop were offered by Williams. (17, page 308)

1. To introduce common materials of industry.
2. To acquaint students with the basic tools and processes of industry.
3. To provide pupils of all aptitudes an opportunity to engage in wholesome, creative endeavor.
4. To develop in each pupil a certain degree of skill in hand tool processes.
5. To provide related information incident to the manufacturing and building industries.
6. To develop in each pupil an attitude of pride and joy in wholesome accomplishment.
7. To develop in each pupil safety consciousness and thoughtful procedure.
8. To provide a teaching situation of cooperative group activities.

Advantages of the General Shop. The chief advantage of the general shop is to provide experiences to many students in various fields of industry rather than just one or two.

The cost of a unit shop is much more than that of a general shop. This being true if the same fields of industry are covered in the unit shop as in the general shop. If money is no problem, then unit shops could be planned. Luehring and Yager list the following advantages of the general shop. (12, page 53)

1. Pupils can have an experience with a greater variety of materials.
2. Makes possible a contact with a greater variety of tools and tool processes.
3. Makes a provision for taking care of individual differences.
4. Makes possible a closer connection between the school and home through home mechanics.
5. Participation in several activities requires a wide range of thinking, thus it is more educational.
6. Provides a better opportunity for pupils to discover their own interests, aptitudes, and capacities.
7. No loss of time in the completion of a project in more than one material.
8. It makes possible the development of initiative and stimulates individual thinking on the part of the pupils.
9. It makes for economy in both equipment and teaching force.
10. It makes possible the more extensive use of the project method of teaching.
11. It eliminates waste of time caused by a duplication of processes in the one industry shop.
12. It enables a pupil to learn to do a great many things which all men should know and be able to do without respect to their vocations.

The general shop program is relatively new and is not a perfect program as yet; but for the junior high school, it is much better than unit shops unless the school has the money and facilities for providing large well-equipped shops in all fields and provides the necessary instructors.

Part B

Selecting Industrial Arts Subjects for the Miami Junior High School

In selecting industrial arts subjects to be taught, one must consider the objectives of the school system along with the needs of the community. It does not mean, however, that the school could not offer other courses in addition to the requirements of the community if money is available. Some students will not remain in that immediate area all their lives and could profit from more experiences.

Kinds of Industrial Arts Subjects. The following list of industrial arts subjects are taken from a Rating Sheet Showing a Profile of Knowledge in General Shop Subjects, prepared by Sam O. Webster and revised by John B. Tate, Department of Industrial Arts Education and Engineering Shopwork, Oklahoma A. & M. College, Stillwater, Oklahoma, in 1948. The industrial arts courses will be listed as (1) those that are typical trades, (2) handicraft of the non-art type, and (3) art-type subjects.

A. Those that are typical of the trades:
   1. Architectural Drawing
   2. Automobile Mechanics
   3. Bench Metal
   4. Blueprint Reading
   5. Cabinet making
   6. Carpentry
   7. Electrical Work
   8. Farm Shop
   9. Forging
   10. Foundry
   11. Hand Woodworking
   12. Heat Treatment of Metals
   13. Machine Drawing
   14. Machine Shop Practice
   15. Machine Woodworking
   16. Mechanical Drawing
   17. Painting
   18. Pattern Making

19. Photography *
20. Pipe Fitting
21. Printing
22. Radio
23. Sheet Metal Work
24. Upholstery *
25. Welding, Acetylene
26. Welding, Electrical
27. Wood Finishing
28. Wood Turning

B. Handicraft of the non-art type:

1. Alabaster
2. Art Copper **
3. Boat Building
4. Book Binding
5. Concrete
6. Home Mechanics
7. Leathercraft **
8. Metal Spinning
9. Model Aircraft
10. Ornamental Iron **
11. Photography *
12. Plastics
13. Reed Work
14. Upholstery
15. Wood Carving **
16. Wood Inlaying
17. Textiles **

C. Art-type subjects:

1. Art Copper Work **
2. Industrial Arts Design
3. Jewelry Making
4. Leathercraft **
5. Ornamental Iron **
6. Wood Carving
7. Ceramics

Basis for Selecting General Shop Courses. In selecting the courses to be offered in the general shop program a number of factors must be considered.

Factors to be considered are: Qualifications of the instructor, number of pupils, grades to be accommodated, community needs, available

* - Classed as "A" and "B"
**- Classed as "B" and "C"

floor space, equipment available, money available for additional equipment, availability of public utilities service, student needs and interests, aims and objectives of industrial arts, program of vocational education, and conference with school officials.

Selection of Courses. With the above factors in mind, the following industrial arts subjects are suggested to be included in the general shop program of the Miami Junior High School.

Electricity

Industrial Drawing I

Leather

Plastics

Metalworking

Woodwork I

Figure I shows a proposed schedule for the general shop. Maximum number of students — 20 per class. Maximum number of classes — 6 per day. Woodwork I and Industrial Drawing I will be the only subjects offered in the eighth grade. With a possible sixty students in the eighth grade, this will allow three classes of twenty students each in the eighth grade, this being during the three morning periods. The first nine weeks of the eighth grade is spent in drawing, and the last twenty seven weeks in woodworking.

In the afternoon the schedule calls for three classes of twenty ninth grade students in each class. They will be rotated through the four shop subjects for a period of nine weeks in each.

Now that the subjects have been selected and the schedule made to accommodate the eighth and ninth grades with a possible number of sixty students in each grade, there remain a few tasks to complete before any

		8th Grade Drawing 9 wks. Woodwork 27 wks.	9th Grade Plastics 9 wks.	9th Grade Sheetmetal 9 wks.	9th Grade Electricity 9 wks.	9th Grade Leather 9 wks.
Mon.	9-10	20 students				
	10-11	20 students				
	11-12	20 students				
	1-2		5 students	5 students	5 students	5 students
	2-3		5 students	5 students	5 students	5 students
	3-4		5 students	5 students	5 students	5 students
Tues.	9-10	20 students				
	10-11	20 students				
	11-12	20 students				
	1-2		5 students	5 students	5 students	5 students
	2-3		5 students	5 students	5 students	5 students
	3-4		5 students	5 students	5 students	5 students
Wed.	9-10	20 students				
	10-11	20 students				
	11-12	20 students				
	1-2		5 students	5 students	5 students	5 students
	2-3		5 students	5 students	5 students	5 students
	3-4		5 students	5 students	5 students	5 students
Thurs.	9-10	20 students				
	10-11	20 students				
	11-12	20 students				
	1-2		5 students	5 students	5 students	5 students
	2-3		5 students	5 students	5 students	5 students
	3-4		5 students	5 students	5 students	5 students
Fri.	9-10	20 students				
	10-11	20 students				
	11-12	20 students				
	1-2		5 students	5 students	5 students	5 students
	2-3		5 students	5 students	5 students	5 students
	3-4		5 students	5 students	5 students	5 students

FIGURE I

Proposed Schedule of General Shop Classes For The

Industrial Arts Program In The Miami Junior High School

experiences may be offered.

These tasks consist of:

I. Planning a shop building.
   A. Space for each subject to be taught.
   B. Location of machines.
   C. Location of benches.
   D. Location and making of tool cabinets.
   E. Correct lighting and heating.
   F. Rest and wash room.
   G. Material storage.
   H. Project storage.
   I. Record storage.
   J. Blackboard space.
   K. Projection area.

II. Selecting tools and equipment.

III. Selecting the required projects that will furnish the necessary experiences for the given subject and also to require the uses of most of the tools of the subject.

IV. A large selection of working drawings of various projects they may choose to make if they have none in mind.

V. Ordering materials and supplies.

VI. Selecting textbooks.

VII. Making lesson plans and job sheets.

The general shop program fits into the junior high school curriculum perfectly. The students at this age are inquisitive and want to be doing something that is useful in their own way of thinking. This makes for a perfect setting of the general shop program as it can offer a wide selection of shop experiences to these students. This will allow a student to do something constructive with his own hands. From these experiences he will be able to do things about the home. The results will certainly be recognized by the older members of the family. These experiences will help the student decide what particular type of work he may want to take up in vocational training, or he may want to use this knowledge as a

hobby. After having experienced the various areas of industry the student will not have to waste productive years of his life deciding whether or not to follow a certain field of work.

Now that the shop programs have been selected the writer will use the next chapter to describe each of these programs. The proposed floor plan will be discussed and a list of tools and materials will be recommended for each program.

CHAPTER IV

THE GENERAL SHOP

Because of individuality of instructors, the writer will make no attempt to organize a course of study and its accompanying list of suggested projects. The writer will give a brief description of each subject and suggest texts for that subject. He will also lay out the floor plan and list those tools and equipment he deems necessary to teach the various subjects.

Part A

Selected Courses

Electricity. The part that electricity plays in the life of every individual today is so great that everyone should know its many uses. In the teaching of electricity, the following objectives should be realized:

1. Learn about the divisions of the electrical trade and the opportunities for employment.
2. How to use simple electrical tools and appliances and their general maintenance.
3. Know the elementary and fundamental principles of electrical equipment.
4. To be able to buy electrical goods intelligently.

Industrial Drawing. The place that drawing plays in our lives today is reflected in everything we do. It has been referred to by many as

the universal language. Its place in the general shop is a must as all the other subjects depend upon a knowledge of drawing. The student cannot properly make a project of any type unless he can read a drawing. If he is to read a drawing, he must first be able to make one.

In the course in industrial drawing the following objectives should be realized:

1. Principles and practice of free-hand drawing.
2. Principles and practice of lettering.
3. Principles and practice of orthographic projection.
4. Principles and practice of dimensioning a drawing.
5. Knowledge of reading drawings and blue printing.

Leather. The art of working with leather is one of the oldest trades known to mankind. The craft is still popular as proven by the practical, useful, and beautiful articles that are being made today.

Leathercraft is very interesting and fascinating hobby today as many craftsmen follow it with great enthusiasm. The industrial arts programs have helped very much in making leathercraft the hobby it is today. The rehabilitation programs of the armed forces have also helped.

Leather is a responsive material in that it is very easy to form into items of beauty; however, the extent to which this beauty is developed depends upon the ability of the student to express himself artistically.

The tools for this trade are few in number and therefore the cost of organizing the subject is very small. This being particularly true when compared to the satisfaction of many pleasant hours of experience the students will derive from it.

Plastics. The period of plastics is here as one can think of but few items that can be or are being made of plastic in some form or another. The industrial use of plastic has been limited until the last few years. One can see its growing use in the aviation and furniture industries and to some extent in all industries.

As a subject to be taught in the general shop, it can be considered as one of the best. The student can use the tools of woodworking or metalworking in the making and forming of an unlimited number of projects. The student will enjoy the hours spent in this subject and very likely will enthuse his mother and father. The projects which can be made are limited only by the students desires, initiative, and originality in selecting a design for an article, this being true if a reasonable amount of skill is applied in working with hand tools.

Metalworking. As a trade, metalworking is a fairly old one and our American way of life is very dependent upon it. It is stated that seven million men and women have occupations directly or indirectly connected with metal products.

The possibility of one becoming connected with this industry in some phase or another is very great. The student should know something about it if there is a possiblity of him working in the industry. Everyone is a consumer of items made of metal. Groneman states that there are over twenty tons of metal in use for every man, woman, and child in the United States. (9, page 112)

In metalwork a student will learn the properties of the various metals and how to use these metals in making projects. These projects can be extremely attractive and useful if the student so desires and has any aptitude at all.

Woodworking. Woodworking was one of the first types of shopwork introduced into our schools. Wood was one of the first materials used by man in his existence for life. A large number of articles are made of wood in our industries of today. If the students are to receive experience in the industrial fields, this form or type of shopwork must be included.

This type of shopwork affords a great deal of pleasure for students of highschool age. They can see results of their efforts. It also lends itself to creative thinking due to the ease by which it may be formed and developed. As a hobby, woodworking possibly has the largest number of followers. This course will include information concerning the following:

1. The different types of wood.
2. The different joints used in the construction of projects.
3. How to use common woodworking tools. (Both hand and machine)
4. The construction of simple pieces of furniture.
5. How to use the various finishes that our industries use today.

Recommended Textbooks. In recommending textbooks for the various areas in the general shop, the writer does not contend that these are the only worthy texts to use. Considering his use of various texts and the way he would teach the courses, these are the books he would use.

Electricity. Groneman, Chris H. and Feirer, John L., General Shop.

Industrial Drawing. Hale, E. M., McGinnis, Harry, and Hill, Cary L., Introduction to Applied Drawing.

Leather. Groneman, Chris H. and Feirer, John L., General Shop.

Plastics. Groneman, Chris H. and Feirer, John L., General Shop.

Metalworking. Groneman, Chris H. and Feirer, John L., General Shop.

Woodworking. Douglass, J. H. and Roberts, M.A., Units in Hand Woodworking.

Part B

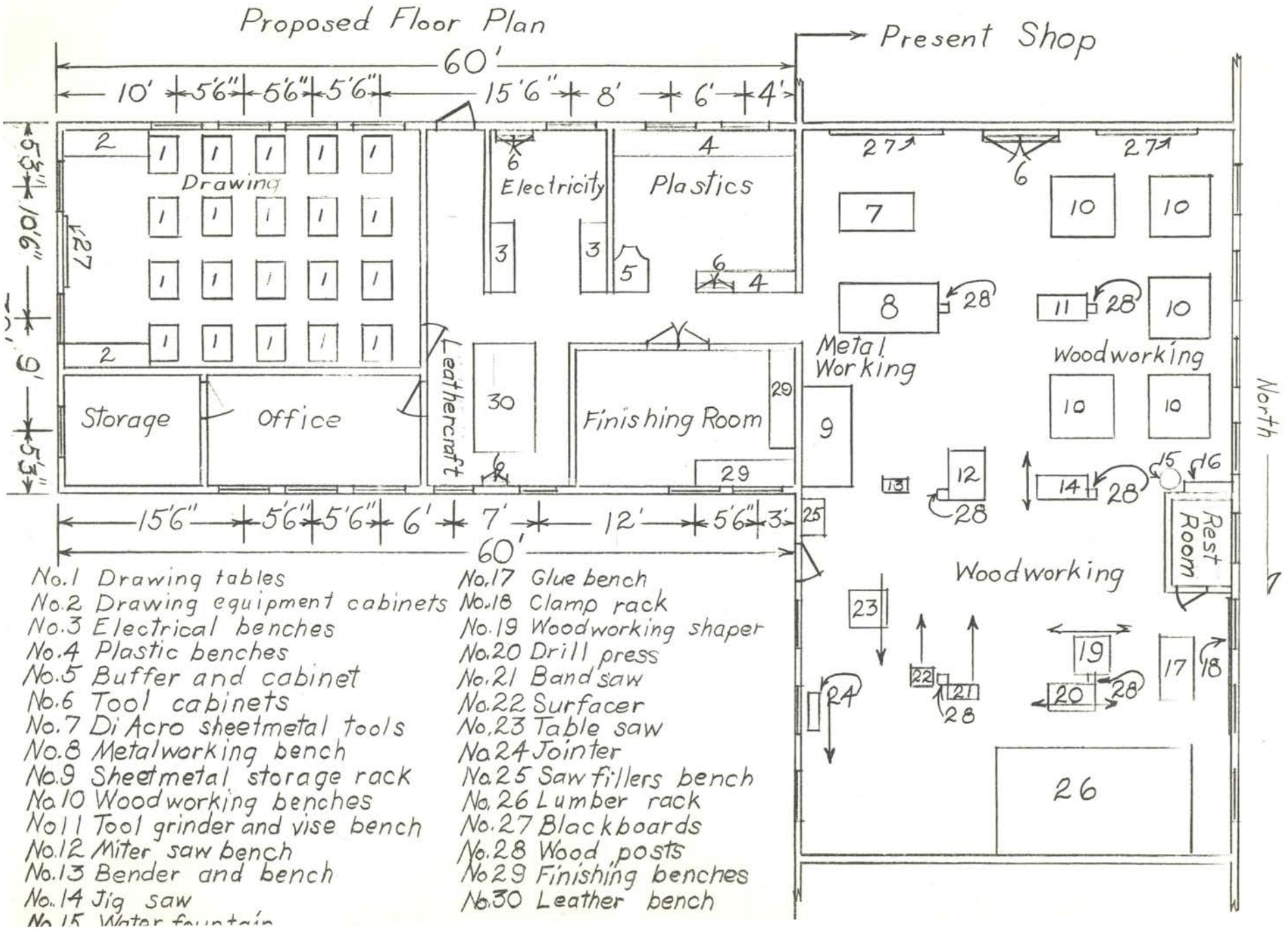
Floor Plan of the General Shop. The present school shop of Miami High School which houses the industrial arts woodworking shop will be left as is, except for removing one wall and adding an addition. The addition will house the other units of the new general shop program, except for the metalworking program.

Figure II is a detailed floor plan of the proposed general shop program at Miami, Oklahoma.

Factors Considered in Shop Planning. In planning a general shop program, there are a large number of factors to be considered in order to have an efficient shop program. A plan that will use the least amount of the instructors time and effort in moving about the various areas will help remove part of the instructors heavy burden. At the best, the teaching of a general shop program is much harder than teaching in a unit shop.

The factors considered in planning the general shop program for the Will Rogers Junior High School at Miami, Oklahoma are as follows:

1. Start with the existing thirty six by sixty feet woodworking shop and drawing room.
2. Amount of space necessary to add to this for the other programs.


Proposed Floor Plan
Present Shop
60'
10'
5'6"
5'6"
5'6"
15'6"
8'
6'
4'
Drawing
Electricity
Plastics
Storage
Office
Leathercraft
Finishing Room
Metal Working
Woodworking
Woodworking
Rest Room
North
15'6"
5'6"
5'6"
6'
7'
12'
5'6"
3'
60'
No.1 Drawing tables
No.2 Drawing equipment cabinets
No.3 Electrical benches
No.4 Plastic benches
No.5 Buffer and cabinet
No.6 Tool cabinets
No.7 Di Acro sheetmetal tools
No.8 Metalworking bench
No.9 Sheetmetal storage rack
No.10 Woodworking benches
No.11 Tool grinder and vise bench
No.12 Miter saw bench
No.13 Bender and bench
No.14 Jig saw
No.15 Water fountain
No.17 Glue bench
No.18 Clamp rack
No.19 Woodworking shaper
No.20 Drill press
No.21 Band saw
No.22 Surfacer
No.23 Table saw
No.24 Jointer
No.25 Saw fillers bench
No.26 Lumber rack
No.27 Blackboards
No.28 Wood posts
No.29 Finishing benches
No.30 Leather bench

3. Lighting.

4. Locating the programs.

5. Locating windows and doors.

6. Storage cabinets, project storage, and material storage.

7. Method of tool storage and their locations.

8. Locating equipment and work benches.

As factor one is existing, factor two will be the first one discussed. To avoid completely reorganizing the present facilities, the writer feels that an addition thirty feet wide and sixty feet long will give the necessary added space. This will allow the continued use of the present shop as a unit shop as discussed in a previous chapter.

The lighting of this shop at present is accomplished by ceiling fluorescent lights and large windows. Three walls of the addition are outside walls. The combination of window light and fluorescent light will be sufficient to light the addition.

Location of the shop programs is a very difficult problem. The method used by the writer was to sketch the present structure and add the addition to the east side. The school owns no ground to the west so that side was eliminated. The dressing room being on one end and the bus barn on the other end of the shop eliminated any possibilities in those directions. After this was sketched, the problem of amount of equipment, number of students, and location of walk lanes determined the location of the programs within the building.

The location of the outside door was determined by the fact that a north door was not wanted. The arrangement of programs and walk lanes were planned to come into the building from the south. The door located itself in line with the south walk lane. The windows are located with

ventilation, lighting, and shop program locations in mind.

The storage problem of lumber was already solved in the woodworking shop. The materials for all other shops will be under the benches and cabinets.

The method of tool storage will be that of closed tool cabinets. This allows twice the amount of tool storage space as the amount of wall space used. Each tool will be painted directly behind it. This will speed up the checking of tools at the end of periods.

The location of benches was determined by the location of the certain shops. One will note the shop area is outlined by the benches of that shop with the exception of the drawing room. The drawing and finishing rooms are separated from the rest of the shops by glass walls. The metalworking benches are located in the center of that shop. It is necessary to be able to work around the bench.

The locating of the woodworking machines and benches was planned some three years ago. The locations of these machines and benches has proved satisfactory so I will leave them in their present location.

What few machines that will be necessary in the other shops will be of the type that will occupy space on the benches in that area.

Suggested Tools and Equipment. The selecting of tools for the various shop programs will be listed in the same order as the programs were discussed.

Electricity Tools.

5 each, Hammers, claw. 14 ounces

5 each, Screwdrivers, 4 inch electricians

5 each, Screwdrivers, 3 inch electricians

5 each, Pliers, sidecutting 6 inch

1 each, Brace, ratchet 10 inch

1 each, Brace, angle 10 inch

1 each, Bit, extension

1 set, Bits, auger 1/4 inch to 1 inch by 16's

2 sets, Bits, drill, 1/8 inch to 1/4 inch by 64's

1 each, Blowtorch

5 each, Frames hacksaws 12 inch

3 dozen, Blades, 12 inch hacksaw

5 each, Vises, 3 inch swivel machinist

1 each, Vise, pipe

2 each, Hammers, machinist

1 each, Saw, compass

5 each, Mallets, 2 inch rawhide

2 each, Kits, Crow. No. 41B

1 set, Stock and die, 1/8 inch to 1 inch by 1/8's

2 each, Wrenches, pipe 14 inch

2 each, Handsaws, 9 point crosscut

1 each, Bar, wrecking 30 inch

24 each, Handsaws, box 3/8 inch

1 each, Multi breaker, 4 circuits

250 foot roll, Romex, number 12

6 each, Receptacle, duplex

6 each, Sockets, pull chain

6 each, Switches, single pole

6 each, Switches, 3 way

12 each, Lamps, 110 Volts, A. C., 25 Watt

6 each, Boxes, junction

6 each, Boxes, switch

12 each, Receptacles, porcelain

2 each, Iron, soldering 150 watt electric

12 each, Plugs, rubber

Electricity. "Expendable Supplies"

12 rolls, Tape, friction, 8 ounce rolls

5 pounds, solder, rosin flux, hollow core

Industrial Drawing Tools.

24 each, Scales, architects

24 each, Squares, tee 24 inch

24 each, Boards, drawing 20 inches by 24 inches

24 each, Triangles, 45°, by 10 inches

24 each, Triangles, 30° by 60°, 10 inches

24 each, Protractors

24 each, Compass, pencil

24 each, Tables, drawing

1 each, Cutter, paper 24 inch

Drawing. "Expendable Supplies."

1 ream paper, drawing, light green 12 inches by 18 inches

Leather Tools.

6 each, Knives, leather skiving

1 each, Knives, draw gauge

2 each, Tool, edging

1 each, Shears, heavy duty

6 each, Modeler, tracer

2 each, Tool, edge creasing

1 each, Punch, rotary head

1 each, Setter, eyelet

6 each, Awls, fid

6 each, Mallets, wood

2 each, Punch, lacing gauge

2 sets, Snap fastener sets

1 each, Stippler

5 each, Squares, steel, 12 inch by 1 inch by 7 inch by 1 inch

3 each, Stamps, brass background

1 set, Punches, drive No's. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Leather. "Expendable Supplies"

24 each, Buckles, belt for 5/8 inch strap

48 inch, Rivets, rapid brown

1 gross, Fasteners, snap brown

2 pints, Cement, rubber

1/2 side, Cowhide, tooling calf finish, tan

1/2 side, Cowhide, tooling calf finish, brown

24 each, Strips, belt. 1 inch wide, 36 to 38 inch length, tan

100 yards, Lacing, 3/32 inch, brown

100 yards, Lacing, 3/32 inch, tan

2 each, Skiver, sheepskin. 1 each brown and 1 each black.

24 each, Frames, key, 4 hook

Plastic Tools.

5 each, Squares, 12 inch combination

5 each, Compasses, pencil

5 each, Rules, 24 inch wood

5 each, Saws, coping

2 each, Saws, back 12 inch

5 each, Planes, Block

5 each, Files, 12 inch mill

1 set, Drills, plastic cutting. 1/16 to 1/2 inch by 64's

1 each, Punches, center

3 each, Hammers, ballpeen 12 ounce

1 each, Countersinks, Yankee type

1 set, C. N. tap and die. From 3/16 to 1/2 inch by 1/16's

5 each, Awls, scratch

1 each, Heavy duty flexible shaft machine. Foredom No. D - 30X or equal

1 each, Buffing and grinding motor. Foredom Model number 2 or equal

6 each, Drills, 3/32 inch stubby carving

6 each, Drills, 1/8 inch stubby carving

Plastic. "Expendable Supplies"

25 sheets, Sandpaper, wet or dry. No. 320

25 sheets, Sandpaper, wet or dry. No. 400

1 pound, Plaster, white carving.

15 jars, Dye, internal carving, 1 ounce with dropper. Assorted colors

10 pounds, Plexiglass, blocks, clear. From 1/2 inch to 1 inch thickness, random widths and legnths.

20 pieces, Plexiglass, assorted colors, 1/8 inch thick and 6 inches squares

1 piece, Rod, round, 3/8 inch diameter by 48 inches long. Clear cast lucite

2 pieces, Rod, square, inch 1 square, 24 inches long, Clear plexiglass

1 piece, Plexiglass, clear sheet, 1/8 inch thick by 37 inch by 48 inch

1 gross, Screws, ear. With pendant loop. Gilt finish

1 gross, Screws, ear. With plastic tab mounted cup. Nickel finish

1 gross, Screws, ear. With pendant loop. Nickel finish

1 gross, Screws, ear. With plastic tab mounted cup. Gilt finish

1 gross, Eyes, screw (silver)

1 gross, Eyes, screw (gold)

1 quart, Pleximent

2 tubes, Cement, bond. 3 1/2 ounce tubes.

Metalwork Tools.

5 each, Saws, hack 12 inch

5 each, Dividers, 12 inch

5 each, Hammers, ballpeen, 12 ounce

5 each, Hammers, ballpeen, 7 ounce

5 each, Screwdrivers, 4 inch

2 each, Screwdrivers, 3 inch

2 each, Screwdrivers, 6 inch

5 each, Punches, center

5 each, Files, 12 inch mill

1 each, Stone, India 1 inch by 2 inch by 8 inch

5 each, Goggles, safety

1 each, Anvil, 70 pound

2 each, Squares, framing

1 each, Dresser, emery wheel

2 each, Wrenches, 12 inch adjustable

5 each, Squares, 12 inch combination

2 each, Pliers, 8 inch sidecutting

5 each, Clamps "C", 3 inch

5 each, Clamps "C", 4 inch

1 each, Vise, swivel machinist, 4 inch

1 each, Drill, hand, 1/4 inch

2 each, Cards, file

5 each, Brushes, wire long handle

4 each, Awls, scratch

2 each, Wrenches, pipe 14 inch

2 each, Chisels, cold 1 inch

2 each, Chisels, cold 3/4 inch

2 each, Chisels, cold 1/2 inch

1 each, Cutter, pipe

1 set, Drills, metal cutting 1/16 inch to 1/2 inch by 64's

1 set, N. C. Taps and dies. From 3/16 to 1/2 inch by 1/16's

1 each, Furnace, gas operated

5 each, Countersinks, metal cutting 1/2 inch

1 each, Snips, tin 3 inch curved

1 each, Snips, tin 3 inch straight

1 each, Rivet, set.

1 each, Hammer, forming

1 each, Caliper, 8 inch outside

1 each, Caliper, 8 inch inside

1 each, Press, drill bench 14 inch, 1/2 hp. motor

1 each, Drill, 1/4 inch portable electric

5 each, Coppers, soldering 2 pound

1 each, di-acro Deal No. 1. Consisting of:

Spartan Model 24 Roller, 24 inch width, 20 ga. capacity

Spartan Model 24 Box and Pan Brake, 24 inch width, 16 ga. capacity

Di-Acro Shear No. 4, 24 inch width, 16 ga. capacity

Di-Acro Notcher, 16 ga. capacity

Di-Acro Bender No. 2, capacity 1/2 inch steel bar, 3/4 inch O.D. tubing

Bender Accessory Package

Bender Stand

Machinery stand with storage shelf

Metal work. "Expendable Supplies"

24 each, Draw bolts, 1 1/2 inch by 2 3/4 inch

10 sheets, Galvanized steel sheets, 24 inch by 96 inch, 26 gauge

5 sheets, Galvanized steel sheets, 24 inch by 96 inch, 22 gauge

5 sheets, Galvanized steel sheets, 24 inch by 96 inch, 28 gauge

5 sheets, Black annealed sheets, 24 inch by 96 inch, 26 gauge

3 sheets, Black annealed sheets, 24 inch by 96 inch, 16 gauge

5 sheets, Perforated sheet steel, 24 inch by 72 inch, 22 gauge

2 pounds, Tinners rivets, 1 1/2 pounds

3 pounds, Tinners rivets, 2 1/2 pounds

3 pounds, Mild steel rivets, 1/8 inch by 1/2 inch, R. H.

1 gross, Sheet metal screws, No. 6 by 1/2 inch

200 feet, Mild steel, 1/8 inch by 3/4 inch

100 feet, Wire, tinned, 1/8 inch diameter

24 pair, Brass hinges, butts, 1 inch by 1 inch

The writer would like to refer to this chapter as the "meat" of the report. It is the compiling of all the other chapters. The description of the subjects and the planning of the program are the results of all the chapters plus the writers previous experience.

Time would not permit the organizing of a course of study and its accompanying list of suggested projects. In the next chapter a solution for these problems will be provided.

CHAPTER V

Conclusions and Recommendations

The introduction of industrial drawing in 1817 into the public schools of Massachusetts was possibly the first form of industrial arts in our American schools. The teaching of manual arts by the use of tools started in Philadelphia in 1876. Continuing the study of the history of industrial arts up to the present world gives the beginning of the general shop program in 1925. The movement in this direction did not really get started until the middle thirties. From that time on the general shop program has grown progressively in the junior high schools. The reason for the popularity is due to the broad covering of the industrial field with the minimum expenditure of funds. Another factor that contributes to this popularity is that the physicological growth of the junior high student is just right to receive the experiences offered in the general shop program. The general shop is a program where more than one subject is taught at the same time by the same instructor. The purpose of which is to provide experiences of all industrial situations possible.

Part A

Summary of Findings

The New Industrial Arts Program for the Miami Junior High School. The subjects that can be offered in the general shop program are widely varied; it covers all the industries. The purpose of industrial arts is to give the student experiences in all or as many industries as

possible. The courses that are recommended to be taught were selected after a study was made of the community and the needs of the students.

The students will start the program while in the eighth grade. They will spend the first nine weeks in an industrial drawing class. It is in this class that they will receive the basis for all the other general shop subjects. The remaining twenty seven weeks of the eighth grade will be spent in Woodworking I. Here they will learn the use of tools that are basic in most of the other shop subjects.

The students in the ninth grade will be allowed to take nine weeks of training in each of the other four general shop subjects. These subjects are metalworking, electricity, leathercraft, and plastics.

Advantages of the General Shop. In summing up the advantages of the general shop, the first one would be the broad covering of the industrial field with the least amount of expenditures. It allows students to have experiences with a greater variety of materials. The real relationship between school and home is much closer. The program utilizes the equipment and instructor. It provides a better opportunity for the students to find their own interests, aptitudes, and capacities. It enables the student to be able to do a great many things that as an adult he will need to know, this being particularly true with the do-it-yourself movement so popular at the present time. In our smaller junior high school systems where money is a problem, the general shop program is the answer. The program offers the best means of giving a great variety of industrial experiences to the student with the least expenditure.

Part B

Recommendations for Further Study

The problem of this study was to plan a general shop program for a given junior high school. To give recommendations for further study would be in the direction of this particular program. The study recommended is to develop a file of drawings of suitable, suggestive projects and a course of study for the general shop program.

Another recommended study would be to contact the leading companies of every type of industry in America. The purpose would be to ask their recommendations of an exploratory experience or experiences that could be used in the general shop program to best illustrate that industry. The use of these experiences should give a student a better understanding of that industry.

Even though the purpose of this report was to plan a general shop program for a given junior high school, it is hoped the reader may have found some information that can be used in a program that is operating or one that is in the planning stage.

Appendix A

A Selected Bibliography

Bibliography

1. American Vocational Association. Improving Instruction in Industrial Arts Teaching, Committee Report, C. M. Miller, Secretary, Topeka, Kansas, 1946, 96 pages.

2. Anderson, Lewis F., History of Manual and Industrial School Education, D. Appleton and Company, New York, 1926, 251 pages.

3. Bawden, William T., Leaders in Industrial Education, Bruce Publishing Company, Milwaukee, 1950, 196 pages.

4. Bennett, Charles A., History of Manual and Industrial Education Up To 1870, Manual Arts Press, Peoria, Illinois, 1937, 461 pages.

5. Carr, Thomas C., A Proposed Industrial General Shop Course For the Junior High School of Sapulpa Oklahoma. Unpublished, Master's Report, Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma.

6. Durham, James H., A Proposed Industrial Arts Program For The Junior High Schools of Enid Oklahoma, Unpublished, Master's Report, Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma.

7. Ericson, Emanuel E., Teaching the Industrial Arts, The Manual Arts Press, Peoria, Illinois, 1946, 376 pages.

8. Friese, John F., Course Making in Industrial Arts, The Manual Arts Press, Peoria, Illinois, 1946, 297 pages.

9. Groneman, Chris H., and Feirer, John L., General Shop, McGraw-Hill Book Company Inc., New York, New York, 1954, 307 pages.

10. Hunt, DeWitt T., The Professionalization of Industrial Arts Teachers, Unpublished Paper, Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma.

11. Ludington, John R., Enrichment of Pupil Experiences Through Industrial Arts, School Life 31: 11-12, May 1949.

12. Luehring, Arthur H., and Yoger, Sylvan A., A General Shop, Its Equipment and a Suggested Curriculum for the Smaller High School, Teachers College Journal, 7: 51-82, March 1936.

13. Newkirk, Louis V., Organizing and Teaching the General Shop, Charles A. Bennett Company, Inc., Peoria, Illinois, 1947, 194 pages.

14. Newkirk, Louis V. and Stoddard, George D., The General Shop, The Manual Arts Press, Peoria, Illinois, 1929, 190 pages.

15. State Advisory Committee for Oklahoma Schools, Industrial Arts in Oklahoma, State Department of Education, Capitol Building, Oklahoma City, Oklahoma, 1950, 164 pages.

16. Wilbur, Gordon O., Industrial Arts in General Education. Scranton: International Textbook Company, 1948, 362 pages.

17. Williams, Amos G., Building a General Shop Curriculum, Ia and Ve, 33: 307-309, October 1944.

VITA

William Alfred Davis

Report: A Proposed General Shop Program For The Junior High School of Miami Oklahoma.

Major Field: Industrial Arts

Biographical:

Personal Data: Born near Stillwater, Oklahoma, October 17, 1917, the son of Wm. E. and Lucy M. Davis.

Education: Attended grade school in Stillwater, Oklahoma; graduated from Stillwater High School in 1936; received the Bachelor of Science degree from the Oklahoma Agricultural and Mechanical College with a major in Trade and Industrial Education, in August, 1948.

Professional Experience: Served as a woodworking supervisor with the National Youth Administration from 1939 to 1942; entered the United States Navy in 1942 and was honorably discharged in 1945, and is now a Lt. Jg. in the United States Naval Reserve; since 1945, except for a period of six months in private business and one years employment as a Processor at the Douglas Aircraft Plant in Tulsa, Oklahoma, has been engaged in attending college or teaching school; taught Industrial Arts at Northeastern Agricultural and Mechanical College, Miami, Oklahoma, for a period of four years, while attending Oklahoma Agricultural and Mechanical College during the period from September, 1946 until September, 1948 taught half time as a student instructor to accumulate one years teaching experience; and the period from 1953 to present, 1956, is employed as an instructor of Industrial Arts, and Vocational Education in the Public Schools at Miami, Oklahoma.

Educational Organizations: Member of the Oklahoma Teachers' Association, Phi Delta Kappa Fraternity, Iota Lambda Sigma Fraternity, Oklahoma Vocational Association, American Vocational Association, and the Red Red Rose, a school man's organization.

REPORT TITLE: A PROPOSED GENERAL SHOP PROGRAM FOR THE JUNIOR HIGH SCHOOL OF MIAMI OKLAHOMA

NAME OF AUTHOR: William Alfred Davis

REPORT ADVISOR: John B. Tate

The content and form have been checked and approved by the author and report advisor. "Instructions for Typing and Arranging the Report" are available in the Graduate School Office or by any committee. The copies are sent to the bindery just as they are approved by the author and faculty advisor.

NAME OF TYPIST: Carolyn Norris